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# Performance within a recession: the converging trajectories of retail centres in the UK


## Abstract

Using retail-centre aggregated microeconomic data for over 65,000 retail and service units in the UK, we explore the differential impact of the recent economic recession on the performance of retail centres. For the first time in the context on town centre/high street analyses of performance, we employ convergence models to examine whether centres with different vacancy rates in the pre-recession period converged in the recession period that followed. Our results indicate that the recent recession had higher negative impact on those centres that experienced lower retail vacancy rates in the pre-recession period, leading to convergence in retail vacancy rates. The location and the size of retail centres seem to moderate the convergence path.


**Key words:** recession; convergence; retail vacancy; UK town centres

## 1. Introduction

The recent financial crisis that led the UK economy from a long period of prosperity into a recession has generated considerable research interest. In the fields of regional science and economic geography, the impact of the crisis was examined in the context of the persistent spatial economic imbalances in the UK (Dorling, 2010; Gardiner et al 2013), and significant work was produced attempting to conceptualise the multidimensional responses of local economies to macroeconomic shocks (Martin, 2012; Simmie and Martin 2010). Research revealed that regions in the UK had very different responses to the effects of recession and its aftermath, with some regions performing much better than others.

The aim of the present paper is to enhance our understanding of the effects of the 2008 recession, by looking at the dynamics of sub-regional economic systems. More specifically, we examine the performance of town centres and high streets in the UK, focusing on their function as centres of retailing and consumption. The aftermath of the economic crisis caused significant disruptions to the retail activity in town centres, whose economies were already impacted by the longer-term effects of the rise of online retailing and a 'convenience and value-seeking' consumer culture (Wrigley and Lambiri, 2014, Hart and Laing, 2014). Empirical evidence on the effects of recession on the economies of town centres and high streets is rather sparse, mainly due to lack of consistent and widely available data. However, the evidence that does exist (Wrigley and Dolega, 2011) suggests a marked variation in performance of town centres/high streets as they adjusted to the shock-wave of economic crisis, with some centres brushing aside its effects, whilst others struggling to maintain their vitality as places for consumption and retail activity.

Using retail-centre-aggregated microeconomic data for more than 65,000 retail and service units in the UK, this paper aims to explore the differential impact of the economic recession on the performance of these centres of retail activity (i.e. town centres and high streets), and whether their geographical location as well as their size has played a role in moderating this impact. In particular, we start by examining whether the economic recession has had a different impact on centres which experienced high retail vacancy rates in the pre-recession period (2006-2007), compared to those which had low rates of retail vacancies in the same period. For the first time in the debates on retail centre performance, we employ convergence models to examine whether retail centres with different vacancy rates in the pre-recession period converged in terms of performance in the recession period that followed. In addition, we also look at the role of demand and supply factors (affluence, employment, retail

composition of a centre etc) in moderating the impact of the recession and, as such, accounting to an extent for the differential growth performance and convergence of the retail centres in the UK. In light of these circumstances, the present paper then aims to explore spatial and sectoral differences in growth rates, paying particular attention to the role played in this context by the location and size of the retail centres examined. The ultimate aim of the paper is to achieve a deeper understanding of the nature of resilience of retail centres in the UK in order to draw some kind of inference that may be of use to urban and regional policy-makers.

The contribution of the present paper centers on the fact that it significantly enriches the existing – albeit limited – empirical evidence base on town centre and high street performance (Wrigley and Dolega 2011; BIS 2014; Wrigley and Lambiri 2015), by looking at the relative dynamism of these local economies by means of convergence models. To our knowledge it is the first time that convergence analysis is employed at the high street/town centre level: the issue of (di)convergence (club) of the economic performance of those centres has until now remained unexplored, which is all the more surprising in view of the importance of its urban and regional economic policy implications.

This paper proceeds as follows. Section 2 presents some key stylized facts about the performance of high streets in the UK and discusses evidence on the underlying factors affecting those centres' performance and resilience to the recessionary shock. Section 3 sets the context of the empirical study and introduces the data sources employed. The econometric model, along with some descriptive statistics of the variables used are presented in Section 4, which is followed by the interpretation and justification of the regression results in Section 5. The paper concludes with some recommendations for urban and regional policy, and possible directions for future work.

## 2. UK Retail centres in crisis: performance and resilience

The shockwave of the global financial crisis dramatically affected UK town centres and high streets – albeit some more than others. Starting from the second half of 2007, consumer confidence collapsed (and remained negative for the five years that followed – see Figure 1), as households saw a marked decrease in the growth of their disposable income, and as house prices steeply fell (Nationwide, 2014).

*Insert Figure 1 about here*

Combined with unsustainably high retail operating costs (increases in business rates and to a lesser extent rental costs – Table 1), this fragile economic environment meant that many retailers were pushed into administration and some into liquidation.

*Insert Table 1 about here*

Centres with retail activity (town centres and high streets) provided highly visible evidence of the extent of the economic downturn in the UK (Wrigley and Lambiri, 2015), which was reflected in a sharp rise in retail vacancy rates, measured both as a percentage of retail floorspace in a centre, and as a percentage of empty retail units (Figure 2).

*Insert Figure 2 about here*

However, not all town centres and high streets experienced the effects of economic recession with the same intensity. Spatially unbalanced economic performance – particularly as this is reflected in the 'North-South divide' debate – is a key feature of the British economic landscape (Gardiner et al, 2013). Starting from 2008, following a decade of economic prosperity, the regional economies of the north, partly due to their heavier dependence on public sector employment, which made them more vulnerable to the severe government expenditure cuts in that period, performed much worse than southern regions. This meant that northern town centres and high streets, blighted by high unemployment rates and a decline in disposable income and consumer spending, generally performed significantly worse in terms of retail vacancy rates. Indeed, Local Data Company reported that, by 2011 the ten worst performing town centres were located in the Midlands and the North, while the majority of best performing centres were southern (LDC 2012).

Despite the severity of the crisis and its effects on UK town centres and high streets, there is surprisingly little in-depth analysis that assesses the underlying factors which played a role in the observed differential performance of retail centres during the recession period. The empirical evidence that does exist, however, suggests that the geographical aspect discussed earlier – albeit extremely important – is not the only determinant of differential performance. Other factors that have been identified in relevant studies as playing a key role include:

(i) Retail centre size: there is no strong theoretical expectation about how the size of a centre could affect its expected performance and resilience to a macroeconomic shock. We could assume both that *(a)* larger centres are stronger in terms of retail offer, are independent from the potential weaknesses of a vulnerable local environment and, therefore, might ride out better the shockwave of an economic crisis; and (*b*) smaller,

more locally-orientated centres which are focused on covering basic local consumer needs, experience a relative lack of exposure to the risks of business cycle fluctuations and can therefore be more resilient to shocks.

Empirical evidence available so far has not resolved this issue. In Wrigley and Dolega (2011) it has been suggested that, *ceteris paribus*, smaller centres displayed greatest resilience to the recessionary shock than larger centres. Nevertheless, it seems clear that the centre size effect interacts with the North-South effect, in the sense that, whilst large and medium-size centres in the north appear to have performed poorly in terms of increasing vacancy rates, medium and smaller size centres in the south appear to have shown much greater resilience to the shock of economic crisis (Wrigley and Lambiri, 2015). Additionally, evidence on the performance of medium-size centres has suggested that those may have been at greatest risk, as multiple retailers reassessed and reconfigured their store portfolios in favour larger centres - making it difficult for medium-size centres to compete with larger ones which provide a full shopping and leisure experience (Distressed Town Centre Property Taskforce, 2013).

(ii) Retail composition and service/retail balance: Research examining the broad types of retail/service which contributed to increased vacancy rates, finds that the greatest adverse impact from the shock of economic crisis appears to have been felt by comparison retail. In contrast, the service categories – i.e. financial & business services, retail services, and leisure services – seem to have contributed far less to the increased vacancy rates. Indeed, Wrigley and Dolega (2011) found that categories such as retail and leisure services showed evidence of continued growth even in the period of economic crisis, contributing to centre vitality. In particular, they found a substantial (13%) increase in cafes - a finding duplicated at the local level in an earlier study of the transformation of the retail structure of a market town in South West England (Wrigley, Lambiri, Cudworth 2009). Wrigley and Dolega (2011) found strong evidence that centres whose business mixes in the pre-crisis period were characterised by higher proportions of service units relative to retail units were more resilient to the economic shockwave than retail-dominated centres.

(iii) Retail centre diversity: Diversity is most commonly measured by the proportion of small independent retailers and service providers in a centre. It has long been argued that the vitality and sustainable development of retail centres can be equated with diversity and the *'extra value that small, independent and genuinely local shops provide in terms of economic benefit, environmental distinctiveness and the social glue that holds communities together'* (NEF, 2006, p.23). In contrast, the contribution of chain retail outlets – both comparison (non-food) and convenience (food) retail – to the vitality of those centres has been viewed in a much more ambivalent way, mainly due to homogenisation impacts of corporate outlets in town centres, and the increased competitive pressures that they exert on specialist local independent retailers.

Overall, however, it appears that empirical evidence seems inconclusive with regards to the 'diversity protects' argument. More specifically, Wrigley and Dolega (2011) found evidence to suggest that diversity played a protective role in the differential performance of town centres and high streets during recession. Additionally, the study found evidence to suggest that those town centres and high streets which experienced chain retail entry in the form of an in-centre or edge-of-centre corporate foodstore were more likely to have sustained their viability and vitality. However, a more recent study by BIS (2014) found that more homogeneous centres tended to sustain their viability and perform better than less homogeneous ones. The study also revealed that the proportion of independent retail space was very similar in both under-performing and over-performing centres, leading to a conclusion that '*a prevalence of independent stores does not look to be the reason for centres doing well in difficult circumstances*' (BIS, p. 2).

(iv) Institutional support at the local level: Finally, there is an argument that supportive or unsupportive local institutional structures and business-practice environments can impact on how well town centres and high streets ride out the shockwave of an economic crisis. A supportive environment encompasses for instance: involvement in Business Improvement Districts (BIDs) or other relevant schemes; investment in temporary 'crowd-pulling' events to enhance the attractiveness of a centre; funding for town centre management; supportive car parking policies; schemes to strengthen the nightime economy of town centres, etc.

Overall, in recent years there has been a variety of formalised structures developed in the UK addressing the economic and social issues of town centres and high streets, aiming at improving their performance and vitality. So far, the limited evidence that exists on the effectiveness of such schemes seems to suggest that they have had a positive impact (GLA, 2013; Roberts, 2014; Coca-Stefaniak and Carroll, 2014). However, evidence also suggests that there is a great degree of variation on the success of such initiatives, depending on the type of scheme adopted as well as the amount of funding available.

## *3.* Setting the context of the study: sample and data explained

Taking into consideration the abovementioned factors, this paper aims to enrich the empirical evidence by exploring the differential impact of the economic recession on the performance of retail centres (town centres and high streets) during the recession period. The paper relies on retail composition information drawn from the detailed and long-established Experian Goad surveys. Experian Goad surveys are a powerful data source providing detailed, up-to-date information on the retail make-up of shopping areas in the UK and Ireland, and are widely used to provide vital evidence-based research for UK regulatory enquiries (Wrigley et al. 2009, Wrigley and Dolega 2011, Competition Commission 2008).

The sample used for the present study comprises of 267 retail centres located in four UK regions: South West (119 retail centres), East Anglia (31 retail centres), North West (93 retail centres) and West Yorkshire (24 retail centres). Each retail centre had the Experian Goad survey completed in the immediate pre-crisis period (2006 - 2007) and the period which followed the steep plunge in UK consumer confidence (last quarter of 2008 through 2009), allowing for a systematic assessment of the complex adjustment of retail centres to the shock of economic crisis.

The sample was divided into a northern and a southern cluster, reflecting the persistent divide in regional performance (Gardiner et al 2013; Dorling 2010). The northern cluster of 117 retail centres (North West and West Yorkshire) comprises predominantly of urban areas including three major agglomerations of Liverpool, Manchester and Leeds-Bradford. The southern group of 150 retail centres (South West and East Anglia) contains predominantly smaller market towns with only one large agglomeration - Bristol, and several medium-size

urban centres such as Bournemouth, Gloucester, Exeter, Norwich, Peterborough and Cambridge.

Taking into consideration the factors identified in the previous section as key elements underpinning differential performance of retail centres, the study employs the following variables in the empirical analysis:

*Retail centre size*: The entire sample comprised approximately of 63,000 retail/service units in the pre-crisis period[1], with an aggregated retail floorspace of about 140 million square feet (Sq Ft). The average (mean) centre size across the entire sample was 237 units, which is a relatively large, considering that only about 60 centres from the four-region samples fall within the higher end of the retail hierarchy, i.e. the regional, sub-regional and major district centres. Nevertheless, some centres were exceptionally large, in particular those located in the northern part such as Manchester Central and Leeds Central comprising more than 1,200 units each. Moreover, several town centres contained more than 750 retail/service outlets, namely Norwich, Liverpool Central, Bath, Cheltenham and Southport. Taking into consideration the geographical split, an average southern high street/town centre was somewhat smaller in size at 206 units, comparing to the 276 outlets in the northern part of our sample. Figure 3 displays the spatial distribution of 267 retail centres by size and region.

*Insert Figure 3 around here*

Taking retail floorspace as a measure, an average analysed retail centre occupied 0.52 million Sq Ft in the pre-crisis period. The total floorspace of the largest centres such as Manchester Central, Leeds Central, Norwich or Liverpool Central was between 2.5 and 4.5 million Sq Ft, but the smallest shopping parades in Bristol occupied merely 25,000 Sq Ft, an equivalent of an average supermarket.

*Retail composition and diversity*: As discussed in previous sections, two key characteristics of retail centres which are found to play an important role in their economic performance are (a) the balance of retail versus service units; and (b) the proportion of small independent and specialist retailers, which is a used as a measure of diversity (Wrigley and Dolega 2011; BIS 2014). In the sample used for the present study, the overall ratio of service outlets relative to retail units was 1.2 implying that, on average, for each retail unit there were 1.2 service outlets. A few analysed centres such as Camborne, Bristol Whitchurch and Bristol Baldwin Street appeared to have an exceptionally high number of services relative to retail outlets,

[1] See Appendix 1 for an example of an analysed retail centre showing retail/service units and boundaries.

recording a ratio of 4.0 and above. Conversely, several shopping centres and designer outlets, present in the dataset, had the ratio of retail to service outlets extremely low, at 0.4 and lower.

Taking into consideration the broad retail/service categories, comparison retail and leisure services were predominant, occupying respectively 37% and 20% of the total number of retail/service units. The occupancy rates of remaining categories varied only marginally and ranged from 8% in the case of convenience retail to 12% in the case of retail services. Vacant retail on the other hand, calculated as the percentage of empty retail outlets in the pre-crisis survey, accounted for 10.4%. The difference in average vacancy rates in the South at 8.6% and 12.1% in the North indicate diverse underlying regional patterns supporting the South-North divide.

Finally, in terms of diversity – measured as the proportion of independent retailers relative to the national multiples - the 267 centre sample indicates that on average, independent retailers represented the 62.5% of the total sample. This high proportion of independent retailers reflects the large number of market towns in the sample, as larger town/city centres and high streets are dominated by multiple retailers.

## 4 Econometric specification

As discussed earlier, measuring the performance of retail centres is a complex task, and there is no shortage of intricate potential indicators which attempt to capture its multidimensionality (Wrigley and Lambiri, 2015). For the purposes of the present study, we used three proxies for the economic performance of retail centres: the retail centre size (i.e the total number of retail and service units in a centre), the number of vacant retail units, and the vacancy rate. The choice of these proxies was informed by existing empirical studies on town centre and high street performance, but it was also based on more pragmatic considerations regarding data limitations.

In this section, we present the econometric specification used to analyse the 'performance path' of different retail centres as they entered the recession period. Additionally, we explore whether this path led to a convergence in the economic performance of those centres.

Following Quah (1996), the growth mechanism is one whereby economic agents (in our case retail and service units) in an economic system (in our case town centres/high streets) push

back technological and capacity constraints. In the case of centers with retail activity, growth means an increase in aggregate economic performance, due to higher retail occupancy rates (resp. lower vacancy rates). However, Quah's argument is based on the assumption of a positive growth rate. In periods of economic recession, a negative growth in economic performance is expected, because economic agents face technological and pecuniary constraints. But, are these constraints the same for all retail centres? The convergence mechanism determines the relative economic performance of poor and rich retail centres: as convergence can be achieved through either a positive growth rate or a negative growth rate, does growth in poorer retail centres lead to them converging with the richer ones?

Adopting/adapting the neoclassical growth model (Solow 1956; Swan 1956) to look at the economic performance of retail centres, means that the growth rates across retail centres will generally tend to equalise. The neoclassical growth model, however, is based on the assumption of diminishing returns to investment (i.e. constant returns to capital) and implies that each local economy (i.e. retail centre) will converge to its own steady-state level (Tselios 2009). Convergence is driven by capital flowing from places where it is abundant ('strong', well performing retail centres) to where it is scarce ('weak' retail centres with low-economic performance) to achieve the highest relative rates of return. Moreover, people searching better job opportunities are likely to move from low-economic performance to high-economic performance retail centres. This implies that local economic disparities will decline and move towards an economically optimum equilibrium in the long-run (Pike et al. 2006). Once the steady state is reached, the local economy grows at a constant rate (Tselios 2009).

In this paper, we initially test for unconditional (absolute) $\beta$-convergnece in the economic performance of retail centres. The unconditional model assumes that local economies are characterised by the same steady state and differ only in terms of their initial conditions in economic performance. Retail centres starting from a position of a relatively high capital-ration, grow relatively slowly, meaning that low-technology but high-adaptability retail centres catch up and converge to a common steady state. This model implies the elimination of differences in capita-labour rations and economic performances as centres converge, but only if these centres have the same structures.

We then go on to test for conditional $\beta$-convergence in economic performance of retail centres. The conditional model assumes structural differences among local economies which converge to different steady states. Both demand and supply factors account for differences in

steady states. The fact that low-performance but high-adaptability retail centres grow faster than high-performance ones does not necessarily imply the eventual elimination of the gap in economic performance. However, it does mean that the economic performance across localities will stabililize in the long run, provided that some key structural characteristics (e.g. demand-side and supply-side characteristics) of different localities remain unchanged over time (Tselios 2009). Economic performance gaps may persist even in the long run (Tselios 2009). The initial conditions in economic performance of retail centres may drop out when local economies are close to their steady-state growth paths (Griliches and Mairesse 1984, Durlauf and Quah 1999). Overall, high economic performance and high adaptability centres may remain at high levels while low economic performance centres will continue to lag behind. As such, differences in economic performance levels across centres may not even out.

The *hypothesis* addressed here is that retail centres with the same – or different – demand-side and supply-side characteristics (for the unconditional and the conditional convergence model, respectively) a) have negative growth rates (growth mechanism) due to the negative impacts of economic recession; but b) will tend to convergence, with lower negative growth rates being found in low economic performance but high-adaptability retail centres and with higher negative growth rates being found in high economic performance but low-adaptability retail centres.

Following the empirical implementation of the neoclassical $\beta$-convergence model carried out by Barro (1991) and Barro and Sala-i-Martin (1991, 1992), the growth rate of economic performance of retail centres over the interval between the pre-recession and the within-recession period ($Growth_{i,within\text{-}pre}$) is given by

$$Growth_{i,within-pre} = \beta_0 + \beta_1 EconPer_{i,pre} + \beta_2 Demand_{i,pre} + \beta_3 Supply_{i,pre} + u_{i,pre}$$

with *i* denoting retail centres *(i=1, ..., 267)*. *EconPer* is the economic performance of retail centres in pre-recession period. *Demand* and *Supply* are the demand-side and supply-side factors of growth rate in pre-recession period. *u* is the error term. $\beta_0$ is a constant and $\beta_1$ is the coefficient on initial economic performance of retail centres. $\beta_2$ and $\beta_3$ are the vector coefficients on the conditioning variables *Demand* and *Supply*, respectively, which account for differences in steady states across local economies.

As has been mentioned, this present paper also aims to explore spatial and sectoral differences in growth rates, paying particular attention to the role played by the regional location and size of the various retail centres. The two-fold classification – location and size –

allows further insights into the determinants of economic growth. These two factors are the moderators that determine which retail centres will adapt and develop, and which will not. We will investigate whether any potential convergence path is mediated by the location (e.g. North vs South) and the size of the retail centres. As such, we use multiplicative interaction models to examine whether location and size 'intervene' in the convergence process. In other words, we examine whether the magnitude of the coefficient on the pre-recession economic performance of retail centres varies across different locations and across centres of different size. We resort to an interaction analysis, because of its noticeable advantages with respect to alternative methods, such as comparing subgroup-based (e.g. North versus South regions) correlation coefficients (Tselios et al. 2012). Moreover, the latter type of analysis disregards the continuous nature of the retail-centre-size-level moderator and has a lower explanatory capacity as the division into subgroups reduces the sample size (Tselios et al. 2012, Dawson and Richter 2006).

All the models above are estimated by Ordinary Least Square (OLS) estimator which assumes that the unobserved retail-centre-specific effects ($u$) are uncorrelated with the initial economic performance of retail centres (unconditional $\beta$-convergnece model) as well as with the demand-side and supply-side conditioning factors (conditional $\beta$-convergence model).

In line with the aforementioned literature on economic performance and convergence, the retail centres that are faring better the effects of the crisis are those exhibiting relatively high performance and high growth in terms of number of occupied units and occupancy rate, while, conversely, the weaker centres are those exhibiting low performance and low growth in terms of number of vacant units and vacancy rate. The relative position (low versus high) of a retail centre is determined by the median value of the sample, because we weight all the observations (retail centres) equally and the median is not influenced by outliers. It is important to note here that in convergence analysis, we do not assume that one retail centre is more important than the other, i.e. we assume that all centres have equal 'weight'.

Table 2 provides some descriptive statistics (mean, standard deviation, minimum and maximum) of the main variables (*Growth* and *EconPer*) employed in the subsequent empirical analysis. The growth in vacant units and in vacancy rates is positive. This is hardly surprising due to the negative impacts of economic recession on consumer confidence in the UK and as a consequence on the viability of retail and service units on UK town centres and high streets.

*Insert Table 2 around here*

In the conditional convergence model, we include demand and supply factors which account for differences in steady states. These conditioning variables were selected based on theoretical considerations and the availability of reliable data at town centre/high-street level. The demand-side conditioning variables are the percentage of high affluent, average affluent, low affluent and weighted affluent population, the percentage of white population, the percentage of population not owning a car, the percentage of most affluent (high spending) group, the percentage of affluent professionals, the percentage of claimant culture population and the percentage of poor population (low spending group)[2]. The supply-side conditioning variables are the percentage of independent retailers in a centre (the base excludes services), the ratio of car parking units to all retail units in a centre and the entry of a corporate foodstore to a centre between the pre-recession and within-recession period (see Appendix 2).[3] The addition of a set of conditioning variables reflecting key demand and supply features of retail centres, allows us to capture important sources of spatial heterogeneity in the sample. However, most of the above-mentioned retail-centre features are idiosyncratic and path-dependent and, as such, cannot be consistent indicators: as a consequence, any convergence analysis is unable to capture all the sources of heterogeneity (Sterlacchini 2008). Finally, the overall dataset (including the conditioning variables) is balanced. Thus, the estimation methods manage potential heterogeneity bias (Rodríguez-Pose and Tselios 2009).

## 5. Regression results

### *5.1 (Un)conditional convergence and centre performance*

Table 3 presents the regression results of the unconditional convergence model. The insignificant coefficients on the pre-recession town-centre size (Regression 1) and on the pre-recession vacant units variable (Regression 2) do not provide any evidence of unconditional convergence. However, the strong negative coefficient on the pre-recession vacancy rate variable (significant at the 0.01 per cent – see Regression 3) is evidence of convergence towards the same steady state (unconditional convergence). Taking also into account the positive growth in vacancy rate (growth mechanism – see Table 2), the results indicate that

[2] The population/demand-side factors considered relate to retail centre catchment areas of either 1km or 3km depending on the size of the centre analysed.
[3] The descriptive statistics and the correlation matrix of the conditioning variables could be provided upon authors request.

there is a tendency for vacancy rates to increase in retail centres with initially (pre-recession) low vacancy rates,-suggesting that a convergence mechanism is in place.

Centres with the same fundamental characteristics, and thus the same steady state, tend to convergence towards the same invariant vacancy rate. Lagging retail centres adapt and thus converge with the leading ones. Overall, the finding of unconditional convergence is not robust to the choice of the measure used to quantify the economic performance of retail centres.

*Insert Table 3 around here*

The unconditional convergence in vacancy rate models explains approximately 13.93 per cent of the variation in growth rates, However, there are multiple unobserved factors that might explain why there is little evidence of convergence across retail centres.

The next step of analysis is to test for conditional convergence. We examine whether a core set of underlying demand and supply characteristics provides insight into the differences in the levels of growth rates across retail centres. For a proper interpretation of estimation regression results, it is important that results are not influenced by model specification problems (Van Stel and Nieuwenhuijsen 2004). In particular, in the context of our conditional convergence model, we do not include all demand-side and supply-side conditioning factors as explanatory factors due to multicollinearity problems. The correlation coefficient of the explanatory factors in each empirical specification (i.e. the pre-recession vacancy rate, the demand-side characteristics and the supply-side characteristics) is lower than 50 per cent.

Table 4 displays the conditional convergence regression results in vacancy rates. The results show evidence of convergence in vacancy rates across centres, while the coefficients of both the demand-side and supply-side variables are not statistically significant. This means that there is no evidence of strong structural differences across the centres analysed, as they might converge to the same steady state. The insignificance of the conditioning factors might therefore be an indication of unconditional convergence. However, the fact that the empirical specifications account for about 17 per cent of the variance in growth vacancy rates across the sample calls for some caution. A significant proportion of cross-sectional variations in growth rates still remains unexplained.

*Insert Table 4 around here*

We also check whether outliers are important for the estimation results. Omitting the most influential observations (e.g. re-built retail centre) has almost no effect, as the results still show evidence of convergence in vacancy rates.

### *5.2 Relative performance of retail centres*

Figure 4 illustrates the relative performance of the retail centres in our sample, and in a sense, provides an indication of relative resilience of these centres. As explained earlier, the relative position of a retail centre in terms of vacancy rate is determined by the median value of the sample.

The median value of the pre-recession vacancy rate is 0.0889. As such, the vertical axis (Y) in Figure 4 splits the sample into retail centres with pre-recession vacancy rates above the median and centres with pre-recession vacancy rates below the median value. The horizontal axis (X) splits the sample into retail centres with a negative growth rate, and centres with positive growth rates. As such, the most resilient to the effects of recession centres are those belonging to the 3$^{rd}$ quartile in Figure 4, i.e. those centres exhibiting pre-recession vacancy rate below median, combined with negative growth in retail vacancy rates between the pre-recession and recession periods. We also observe that the negative association between the pre-recession vacancy rate and the growth rate for retail centres with high pre-recession vacancy rate is flatter than those with low pre-recession vacancy rate. We note that the analysis is robust to the exclusion of the retail centres with relatively high growth in vacancy rate as a result of undergoing regeneration such as Manchester Openshaw.

*Insert Figure 4 around here*

Overall, we find that 32 retail centres in our sample perform relatively well in terms of vacancy rates. When mapping this result, to examine the spatial distribution of well performing centres (Figure 5), we note a clear North-South divide - with only 8 of these 'resilient' centres of our sample located in northern regions and 24 located in the southern regions. This finding is consistent with existing literature on the heterogeneous spatial distribution of performance, as discussed earlier in this paper.

*Insert Figure 5 around here*

### *5.3 Location and size of retail centres*

We now move on to empirically analyse the role played by the location and the size of retail centres in the convergence path. The theoretical framework suggests that location and size

matter for the economic performance and thus for the growth and convergence of retail centres. Here, we consider differences in growth rates between and within Northern and Southern retail centres in our sample (examining whether location matters) and between and within small-size and large-size centres (examining whether size matters). The 'within' differences represent a club convergence in vacancy rates. A convergence club is a group of retail centres that interact more with each other than with those outside, and which exhibit initial conditions which are near enough to converge towards the same long-run equilibrium (Fischer and Stirbock 2006). Therefore, using interaction effects, the empirical analysis investigates convergence in vacancy rates between and within different categories.

Table 5 displays location (spatial) heterogeneity in convergence in vacancy rates. Regression 1 shows that the growth rate is higher in the retail centres located in the North compared to those in the South. Regression 2 provides evidence of a club convergence in vacancy rates. The speed of convergence, which is influenced by retail-centre specific characteristics, is higher in the South than in the North. However, the differences in the speed of convergence are diminishing once we control for North-South characteristics (Regression 3). We then further explore the location differences in the convergence process by investigating convergence between and within four regions: South West, East Anglia, North West and Yorkshire and Humberside (Regressions 4, 5 and 6). North West has the highest growth in vacancy rate (Regression 4) and the speed of convergence within East Anglia is the highest (Regressions 5 and 6)[4].

*Insert Table 5 around here*

The convergence process is then further analysed paying particular attention to the role of retail centre size. Table 6 displays the retail-centre-size heterogeneity (sectoral heterogeneity) in the convergence of vacancy rates. The results show that the bigger the size of the retail centres, the higher the growth in vacancy rate (Regression 1). However, as the size of the retail centres increases, the speed of convergence decreases, showing evidence of a club convergence (Regression 2).

*Insert Table 6 around here*

[4] We have also looked at spatial heterogeneity in convergence in occupancy rates. The regression results corroborate those above, showing that growth in occupancy rate is higher in the South – and particularly in the South West – and that club convergence is sensitive to the North-South characteristics as well as to regional characteristics.

Overall, the results indicate differences in the growth rates of northern and southern centres, as well as across different sizes of retail centres in vacancy rates, and show evidence of a club convergence in vacancy rates.

## 6. Conclusions

The aim of this paper was to provide much needed empirical evidence on the differential performance of retail centres (town centres and high streets) as they entered into recession. Additionally, the paper examined whether the location and size of those centres has played a role in moderating these recessionary impacts. As such, the main questions addressed in this paper were: Did retail centres with high vacancy rates in the pre-recession period 'catch up' with low vacancy rate centres? Did the location and the size of retail centres moderate the convergence path? And, which centres could be considered most resilient to the effects of the crisis? In order to answer these questions and provide a finer-grained analysis of the economic performance of retail centres, we employed –for the first time in the context of retail centres – convergence models: unconditional convergence, conditional convergence and convergence clubs.

Our results indicate that the recession has had higher negative impact on those retail centres that experienced low retail vacancy rates in the pre-recession period. This implies that retail centres with high vacancy rates 'caught up' with low vacancy rate centres, as recession hit town centres and high streets in the UK. However, overall, only a few retail centres appeared to be really resilient to the economic crisis. Our results show that location and size of retail centres moderated the convergence path. More specifically, and in line with existing empirical studies, we found North-South differences in the growth of vacancy rates, as well as evidence to support club convergence in vacancy rates. Our findings are robust to the inclusion of a series of demand and supply conditioning variables.

Assessing the impact of the recent recession on the performance of retail centres is undoubtedly a very complex task, due to multiplicity of factors at play. As such, there are a number of limitations that this study was not able to overcome, as well as scope for future work. The analysis could be extended to more regions. It would also be valuable to refine our estimates, by considering data spanning longer periods and by experimenting with additional conditioning variables. Finally, it would be useful to verify whether the results are robust to different historical periods. Overall, we believe that the analysis undertaken here and the

contributions made will constitute a solid basis for further investigation into the issues addressed.

Finally, and importantly from a policy perspective, this study has shed light in a marked difference in the readiness of different types of centres to respond to the effects of the recent recessionary shock. The observed variation in performance as those centres entered the recessionary period – albeit not surprising due to the different characteristics of those centres in terms of size, geography, catchments and retail composition – raises questions about the role of local policies and associated strategies, aimed at the vitality and viability of those centres. Pursuing sustainable convergence is mainly a government responsibility – however efforts at the national level should be complemented by structural reforms at the local level. In the process, local partnership arrangement in town centres, which can help to fine-tune local funding and to bridge gaps between public sector delivery and private sector/retailers' requirements, are vital and should be encouraged.

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## Tables

**Table 1:** Selected operating costs in UK retailing, 2006-2012 (Source: DCLG)

| Spending, £m | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2006-12 |
|---|---|---|---|---|---|---|---|---|
| ***Total labour costs*** | 37,770 | 43,448 | 44,992 | 44,798 | 45,143 | 45,927 | 48,140 | **+27.5%** |
| ***Rent*** | 14,995 | 16,347 | 16,533 | 16,500 | 15,400 | 15,300 | 15,600 | **+4.0%** |
| ***Business rates*** | 5,620 | 5,958 | 6,266 | 6,431 | 6,489 | 6,819 | 7,246 | **+28.9%** |

**Table 2: Descriptive statistics for the economic performance and growth rate of retail centres**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Growth in town-centre size | 267 | 0.0111151 | 0.0544135 | -0.1973684 | 0.4178674 |
| Pre-recession town-centre size | 267 | 236.9775 | 206.1473 | 11 | 1525 |
| Growth in vacant units | 267 | 0.3424019 | 0.6167896 | -1 | 4.5 |
| Pre-recession vacant units | 267 | 24.32584 | 29.50918 | 0 | 259 |
| Growth in vacancy rate | 267 | 0.3217655 | 0.5842695 | -1 | 3.888889 |
| Pre-recession vacancy rate | 267 | 0.101041 | 0.0629255 | 0 | 0.3434343 |

**Table 3: Unconditional convergence in economic performance of retail centres**

| | (1) Growth in town-centre size | (2) Growth in vacant units | (3) Growth in vacancy rate |
|---|---|---|---|
| Pre-recession town-centre size | 0.0000 | | |
| | (0.000) | | |
| Pre-recession vacant units | | -0.0017 | |
| | | (0.001) | |
| Pre-recession vacancy rate | | | -3.4653 |
| | | | (0.529)*** |
| Constant | 0.0063 | 0.3842 | 0.6719 |
| | (0.005) | (0.049)*** | (0.063)*** |
| Observations | 267 | 267 | 267 |
| R-squared | 0.0060 | 0.0068 | 0.1393 |

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

**Table 4: Conditional convergence in vacancy rate**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Pre-recession vacancy rate | -3.4531 (0.545)*** | -3.6380 (0.561)*** | -3.7616 (0.574)*** | -3.5579 (0.556)*** | -3.8394 (0.620)*** | -3.9240 (0.584)*** | -3.7409 (0.615)*** |
| *Demand-side factors (within 1 km catchment area)* | | | | | | | |
| High affluence | -0.0008 (0.001) | | | | | | |
| Average affluence | | -0.0022 (0.001) | | | | | |
| Low affluence | | | 0.0021 (0.001)* | | 0.0016 (0.001) | | |
| Weighted affluence | | | | -0.0011 (0.001) | | | |
| White | | | | | 0.0347 (0.344) | | 0.0106 (0.346) |
| Professionals | | | | | -0.2064 (0.711) | | -0.3711 (0.705) |
| Low spending group | | | | | 0.1151 (0.640) | | 0.3759 (0.644) |
| High spending group | | | | | -0.4861 (0.565) | -0.4501 (0.538) | -0.6479 (0.549) |
| No car | | | | | | 0.7388 (0.375)** | |
| Claimant culture | | | | | | -0.3731 (0.415) | -0.1792 (0.412) |
| *Supply-side factors* | | | | | | | |
| Independent retailers | -0.1048 (0.178) | -0.0644 (0.180) | -0.0513 (0.180) | -0.0886 (0.178) | -0.0363 (0.185) | 0.0005 (0.187) | -0.0655 (0.187) |
| Car park | -1.2836 (1.114) | -0.8738 (1.098) | -1.2420 (1.082) | -1.3529 (1.102) | -1.2898 (1.117) | -0.5859 (1.154) | -1.1878 (1.115) |
| Corp. foodstore entry | -0.0282 (0.071) | -0.0270 (0.071) | -0.0283 (0.071) | -0.0286 (0.071) | -0.0294 (0.071) | -0.0516 (0.071) | -0.0294 (0.071) |
| Constant | 0.8022 (0.142)*** | 0.8638 (0.148)*** | 0.7044 (0.143)*** | 0.8982 (0.174)*** | 0.7075 (0.368)* | 0.5368 (0.200)*** | 0.7999 (0.358)** |
| Observations | 267 | 267 | 267 | 267 | 267 | 267 | 267 |
| R-squared | 0.1447 | 0.1504 | 0.1533 | 0.1474 | 0.1569 | 0.1635 | 0.1535 |

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

**Table 5: Location heterogeneity (North-South) in convergence in vacancy rate**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Pre-recession vacancy rate | -3.5886 | | | -3.6195 | | |
| | (0.532)*** | | | (0.533)*** | | |
| North | base | | base | | | |
| | category | | category | | | |
| South | -0.1199 | | -0.0696 | | | |
| | (0.067)* | | (0.131) | | | |
| North: Pre-recession vacancy rate | | -2.9881 | -3.3002 | | | |
| | | (0.593)*** | (0.835)*** | | | |
| South: Pre-recession vacancy rate | | -3.9678 | -3.7860 | | | |
| | | (0.600)*** | (0.691)*** | | | |
| South West | | | | base | | base |
| | | | | category | | category |
| East Anglia | | | | 0.0096 | | 0.4385 |
| | | | | (0.109) | | (0.230)* |
| North West | | | | 0.1693 | | 0.1880 |
| | | | | (0.075)** | | (0.145) |
| Yorkshire and Humberside | | | | -0.0595 | | -0.1377 |
| | | | | (0.121) | | (0.252) |
| South West: Pre-recession vacancy rate | | | | | -3.9255 | -3.3422 |
| | | | | | (0.602)*** | (0.721)*** |
| East Anglia: Pre-recession vacancy rate | | | | | -5.1633 | -8.7530 |
| | | | | | (1.280)*** | (2.426)*** |
| North West: Pre-recession vacancy rate | | | | | -2.8357 | -3.5442 |
| | | | | | (0.619)*** | (0.910)*** |
| Yorkshire and Humberside: Pre-recession vacancy rate | | | | | -4.2908 | -2.6032 |
| | | | | | (1.059)*** | (2.027) |
| Constant | 0.7517 | 0.6753 | 0.7199 | 0.6327 | 0.6905 | 0.6056 |
| | (0.077)*** | (0.063)*** | (0.105)*** | (0.072)*** | (0.064)*** | (0.086)*** |
| Observations | 267 | 267 | 267 | 267 | 267 | 267 |
| R-squared | 0.1495 | 0.1493 | 0.1502 | 0.1605 | 0.1589 | 0.1761 |

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

**Table 6: Retail-centre-size heterogeneity in convergence in vacancy rate**

| | (1) | (2) |
|---|---|---|
| Pre-recession vacancy rate | -3.4975 | -2.4063 |
| | (0.526)*** | (0.760)*** |
| Pre-recession size of retail centres | 0.0003 | 0.0011 |
| | (0.000)** | (0.000)*** |
| Interaction: Pre-recession vacancy rate *x* | | -0.0063 |
| Pre-recession size of retail centres | | (0.003)** |
| Constant | 0.5962 | 0.4577 |
| | (0.072)*** | (0.100)*** |
| Observations | 267 | 267 |
| R-squared | 0.1531 | 0.1655 |

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

## Figures

**Figure 1: Consumer Confidence Index change, 2005–2014 (Source: GfK UK Consumer Confidence Index)**

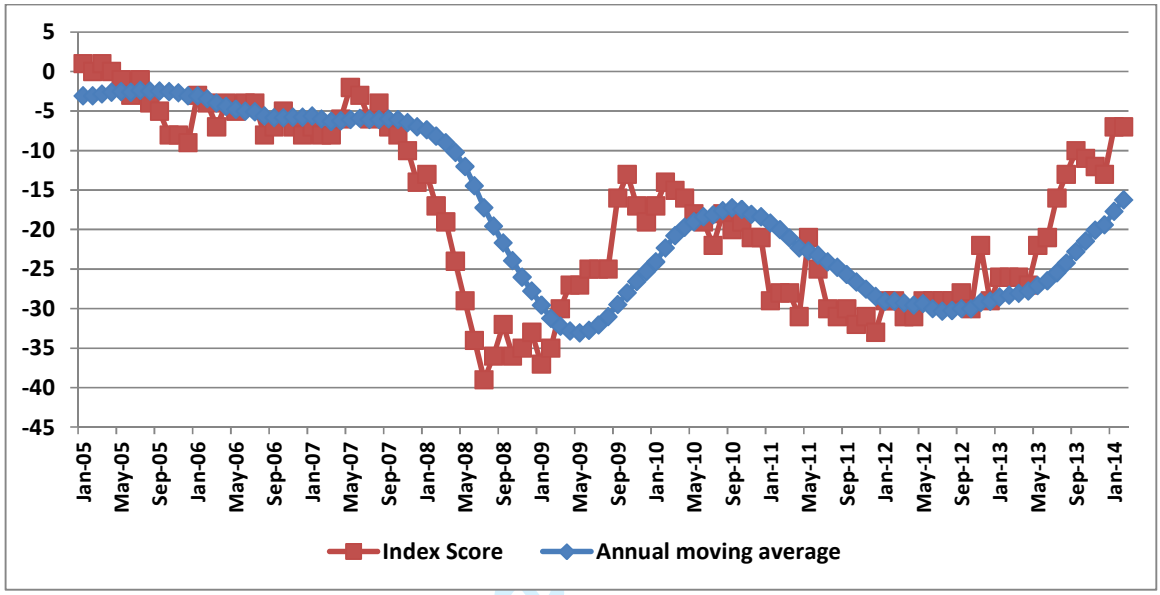


**Figure 2: Retail vacancy rates defined in empty (void) retail units (Source: Colliers International 2014)**

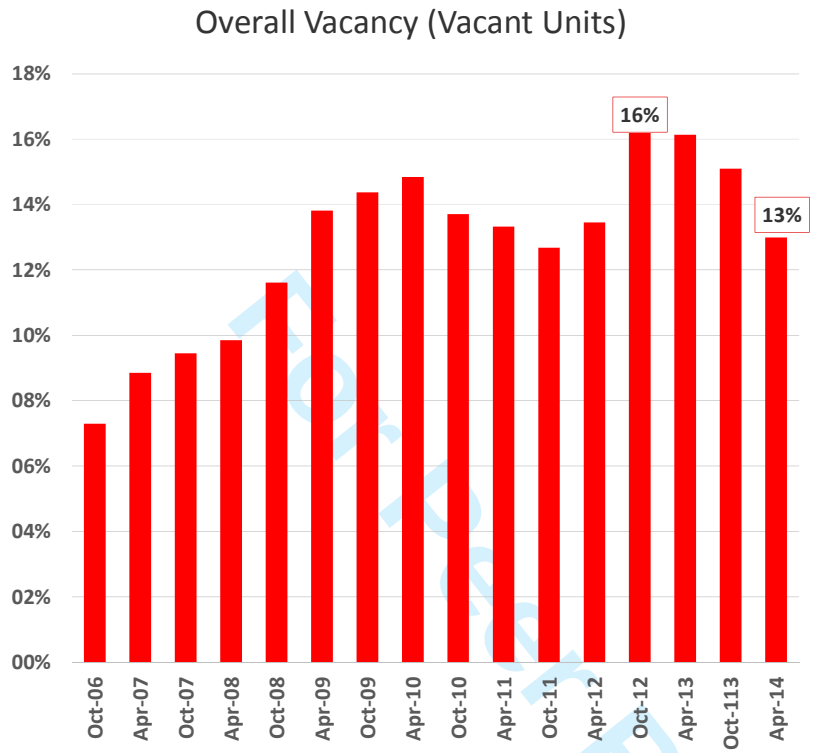


**Figure 3: Distribution of the four-region sample by centre size (no. of units)**

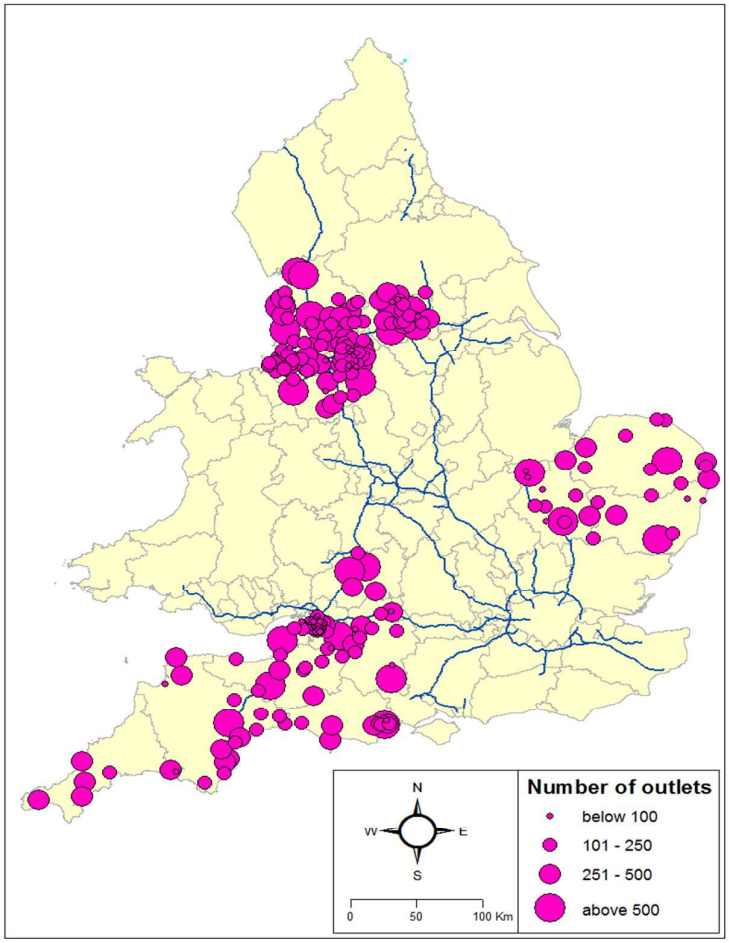


**Figure 4: Relative performance of retail centres**

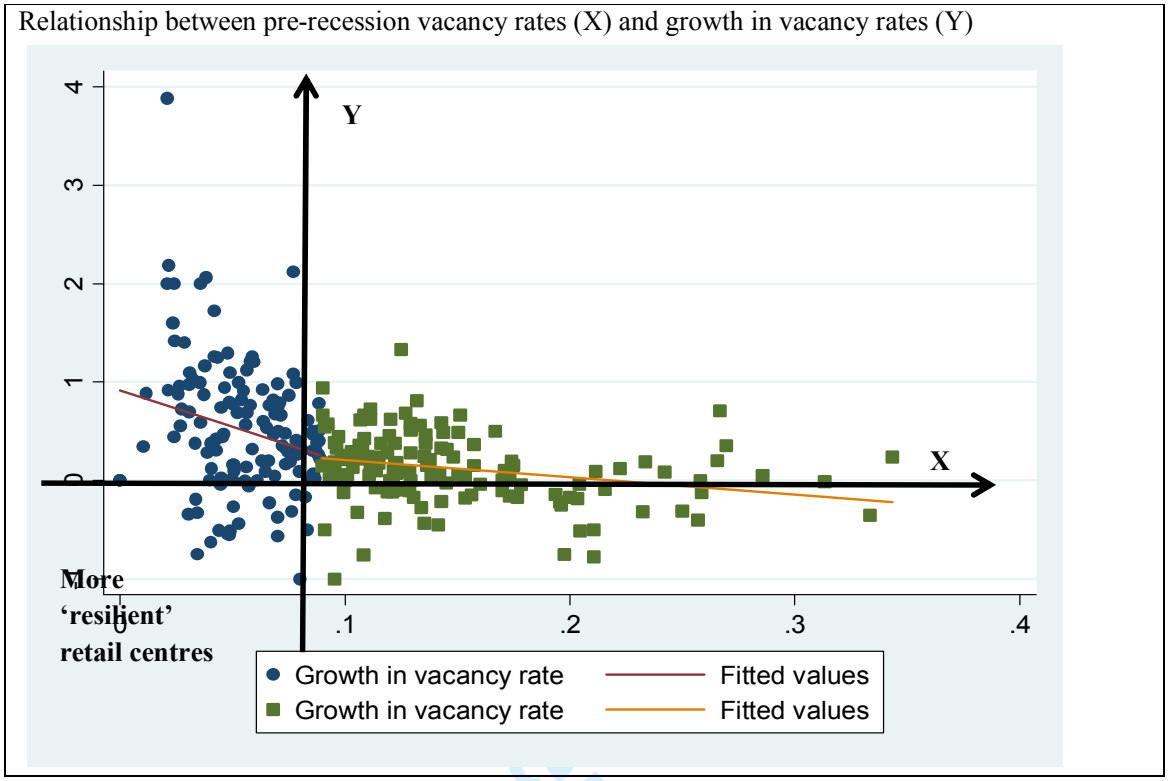
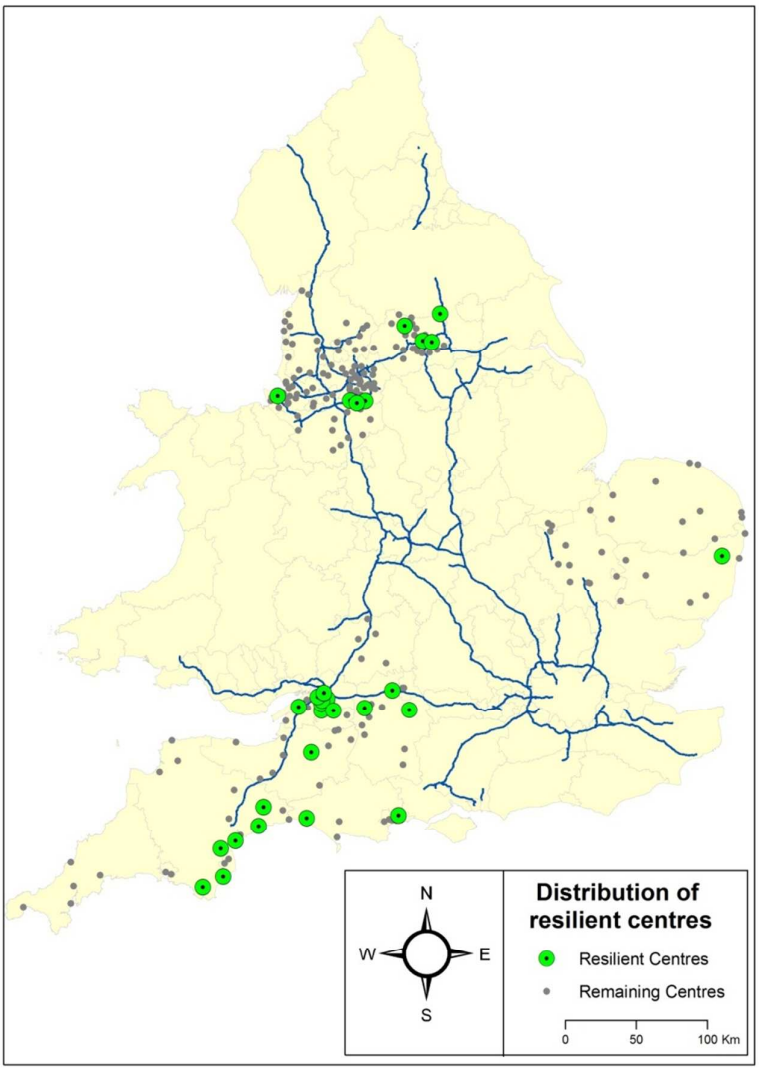
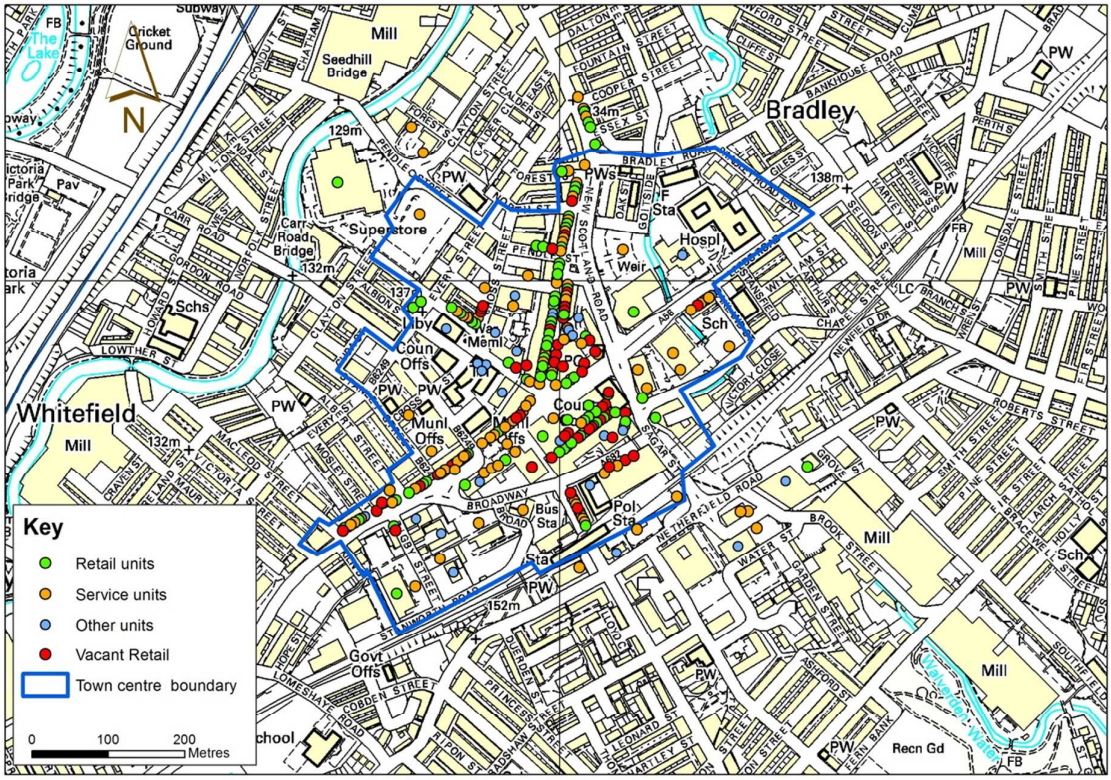


**Figure 5: Geographical distribution of the most 'resilient' retail centres**



## Appendices

### Appendix 1: Example of an analysed retail centre



## Appendix 2: Conditioning variables: demand and supply factors

| Variables | Description | Year | Source |
|---|---|---|---|
| **Demand-side factors*** | | | |
| High affluence | % of high affluent population | 2001-09 | Tesco/Mosaic |
| Average affluence | % of average affluent population | 2001-09 | Tesco/Mosaic |
| Low affluence | % of low affluent population | 2001-09 | Tesco/Mosaic |
| Weighted affluence** | % of weighted affluent population | 2001-09 | Tesco/Mosaic |
| White | % of white population | 2001 | Census 2001 |
| Professionals | % of affluent professionals | 2009 | Mosaic 2009 |
| Low spending group | % of poor population (low spending group) | 2009 | Mosaic 2009 |
| High spending group | % of most affluent (high spending) group | 2009 | Mosaic 2009 |
| No car | % of population with no car ownership | 2001 | Census 2001 |
| Culture | % of claimant culture population | 2009 | Mosaic 2009 |
| **Supply-side factors** | | | |
| Independent retailers | % of independent retailers in a centre (the base excludes services) | 2006 | Goad |
| Car park | Ratio of car park numbers to all retail units in a centre | 2006 | Goad |
| Corporate foodstore | Entry of a corporate foodstore to a centre between the pre-recession and within-recession period | 2006-2009 | Goad |

* All the demand-side factors are either within 1km or within 3 km catchment area. ** This variable is calculated as: $2 * (LOW\ AFFLUENCE) + (AVERAGE\ AFFLUENCE) + (HIGH\ AFFLUENCE)/2$.